

Matthew Pugsley

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Industry Experience

R&D Hardware Design Engineer – Hewlett-Packard (HP Inc.)

July 2023 – Present

- Designed new injection-molded pressure sensor architecture, enabling \$400K+ annual savings, manufactured 300+ prototypes, and built an Arduino-based pneumatic test fixture to validate system performance.
- Led 3 subsystem prototype builds by developing 16 plastic forming tools (heatstake, spin welding, vacuum forming), optimized process parameters for each tool, and trained technicians on my build instructions.
- Leading development of engineering tests for inkjet edge-case performance to help define firmware and cloud architecture solutions with cost savings estimated to \$4 million annually.

Mechanical Design Engineer – Formlabs

January 2022 – August 2022

- Developed new high-viscosity fluid control mechanisms using silicone and HDPE, created test procedures to validate chemical compatibility, fatigue life, and shipping, and worked with manufacturers on mass production.
- Designed and programmed equipment to automate various tests using servos, motors, pneumatics, and sensors.
- Built up prototypes for various components of the Form 4 SLA printer.

Electromechanical Test Engineer – Honda R&D Americas

August 2019 – December 2019

- Designed a test fixture that uses a 3-phase motor, transducer, and DC load to benchmark alternators at extreme temperatures.
- Conducted thermal tests on battery cooling components of the Acura RDX to inform design and sourcing teams.
- Validated electrical performance of car mechanisms related to lift gate, keyless start, and passive current.

Robotics Engineer – Honda Engineering North America

January 2019 – April 2019

- Owned programming and validation for 180 robotic weld points for mass production of the 2021 Acura MDX.
- Documented efficient cable simulation techniques, drastically reducing overtime during new path deployment.
- Communicated cycle time and retooling impacts of vehicle design changes to teams in the US and Japan.

Project Designer – N2Robotics LLC

May 2016 – August 2017

- Managed safe use of a machine shop and taught community classes in electronics, soldering, and programming.

Education

Purdue University – West Lafayette, Indiana

Master of Science, Engineering Management

Graduation: May 2023, GPA 3.9/4.0

Focus Areas: Product Design, Autonomous Robotics, Operations Management & Optimization, Business Strategy

Bachelor of Science, Mechanical Engineering

Graduation: May 2021, GPA 3.4/4.0

University Research, Leadership, & Involvement

Strategic Consultant – Brightlamp Inc

August 2021 – December 2021

- Created a comprehensive go-to-market strategy for a medical software startup seeking adoption by hospitals.
- Conducted extensive market research and user interviews to identify key market opportunities and challenges.

Mechanical Engineer – Coastal Current [Senior Design Project]

August 2020 – May 2021

- Researched ocean wave power generation and designed a novel concept for progressing this technology.

Director of Outreach – American Society of Mechanical Engineers

January 2020 – December 2020

- Managed the outreach committee to plan networking and skill building events for other engineering students.

Lead Mechanical Engineer – Purdue Technical Service Project

June 2020 – August 2020

- Led a team of students in the design of a new automatic winding mechanism for a historic Purdue clock.

Trombone Player – Purdue All-American Marching Band

August 2016 – December 2018

Engineering Toolset

Modeling and Analysis

Design of Experiments	Dynamics & Kinematic Modeling	Thermal Simulation & Testing
Failure & Root Cause Analysis	DfM/DfA/DfX	Fluid Dynamics & CFD

CAD, CAE, and Simulation Software

CATIA V5	SolidWorks	ANSYS	Gazebo	Creo Parametric & Direct
Fusion 360	Abaqus FEA	Onshape	Siemens NX	Autodesk Inventor

Manufacturing and Fabrication Experience

3D Printing (SLA, SLS, FDM)	CNC Mill, Waterjet, Laser Cutter	Robotic Assembly Lines
Metal and Plastics Fabrication	Cycle Time Analysis	Manual Machining & Safety Training

Robotics and Programming

Robotics Experience

Simulating Motion & Collision	ROS Programming Framework	Computer Vision Using OpenCV
Sensor and Motor Selection	Implementing Path Planning Code	Localization and Mapping (SLAM)

Programming Proficiency (over 500 hours)

C & C++	Python 3	Arduino IDE	MATLAB	LabVIEW
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Career Interests

Engineering Design

When designing products and equipment, I always work from basic principles and assumptions to build concepts into solutions. My process involves empathizing with stakeholders to define objectives and parameters; considering the safety, longevity, economics, and impacts of a given design; and iterating on prototypes to deliver high-quality solutions. Developing great design practices is important to me.

Mechatronics and Control Systems

I make myself more valuable as an engineering team member by focusing on understanding electromechanical interfaces that make modern devices possible. By creating mathematical models of mechanical behaviors and understanding what is possible with actuators, sensors, and digital logic, designs can be tuned for specific performance without becoming costly or complicated.

Technical Leadership

Effective managers can assess complex situations, logically define objectives, create actionable tasks, follow up on progress, and adjust their approach over time. When engineers can apply these same management skills to the process of design, they can help lead projects in a more adaptive and goal-driven way. I have been intentionally building management knowledge into my education and experiences throughout my career to become a more capable engineer and leader of technical projects.